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FEB 26 2008USSN 10/608,790
Docket No.: 7302/ 0140-1**REMARKS**

In response to applicant's Appeal Brief filed September 14, 2007, prosecution in the present application was reopened with the issuance of the present Office Action. The present submission is made under 37 CFR 1.111 in response to this Office Action and in accordance with MPEP 1207.04.

Claims 4, 6, 8, 10, and 24 have previously been cancelled, and claim 30 stands withdrawn as being directed to a non-elected invention.

Applicant's invention, as recited by presently pending claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-34, as amended, provides a nonwoven, fibrous mat comprising a blend of a major portion composed of chopped glass fibers having an average fiber diameter of about $11 \pm 1.5 \mu\text{m}$ and a minor portion composed of fine staple fibers having an average fiber diameter of less than about $5.5 \mu\text{m}$. The minor portion is composed of glass or mineral fibers and comprises about 1-30 percent of the dry weight of the web. Also provided is a gypsum board faced with such a mat. In various embodiments, the gypsum board exhibits a combination of desirable structural and functional features that render it fire resistant and easily painted or otherwise given an aesthetically pleasing finish after installation with a minimum of surface preparation required. The mat has a high permeability, permitting easy extraction of excess water ordinarily present during slurry-based manufacture of gypsum or other hydraulic set board. Surprisingly and

board. Surprisingly and unexpectedly, gypsum board faced in accordance with the invention with the present nonwoven glass fiber mat, has a smoother surface than boards made with known mats employing fibers having either larger or smaller average diameter. It is especially surprising and significant that the aforementioned fiber blend results in smoother board than would otherwise be obtained in prior art mats made with fibers having a single average diameter.

Claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-33 were rejected under 35 USC 103(a) as being unpatentable over US Patent 4,647,496 to Lehnert in view of US Patent 5,389,716 to Graves in further view of US Patent 4,637,951 to Gill.

Lehnert et al. provides an exterior finishing system for a building, such as a fibrous mat-faced gypsum board having a water resistant, set gypsum core.

The Examiner has stated that Lehnert teaches a fibrous mat-faced gypsum board comprised of a gypsum core that is sandwiched between two sheets of glass mat. It is further alleged that Lehnert teaches glass fibrous mat made from chopped fiber in a resinous binding, such as modified urea-formaldehyde. Applicant respectfully observes that Lehnert calls for facers that are porous glass fiber mats. See, e.g., col. 4, line 57. In addition, Lehnert discloses gypsum that penetrates "but part-way into the thickness of the mat" of one board face (col. 4, lines 59-60) and "substantially through the thickness of the mat" at the other face (col. 5, lines 5-6 and 24-31). It is said to be necessary for the mats to be permeable to allow the high

permeable to allow the high water content of the gypsum slurry to be extracted as liquid or vapor during the production and board curing (col. 9, lines 8-16).

The Examiner has admitted that Lehnert does not teach the fiber sizes and compositions of the glass fibrous mats recited by applicant's independent claims 1, 29, 31, 32, and 33. Accordingly, she has cited Graves, which discloses a binder composition for fibrous mats that is said to be fire resistant when cured. The mats are said to be suitable for a backing layer for gypsum.

The Examiner has further contended that Graves teaches that glass fibers improve the structural foundation of finished mats, and that fibers of varying sizes may be blended together to form the mat. It is said that by varying the length and diameter of the fibers the structural properties can be altered.

Applicant respectfully submits that the foregoing disclosure falls far short of any specific disclosure or suggestion of applicant's claimed fibers. On the contrary, Graves teaches a range of fiber diameters and lengths that is far broader than what applicant recites. The following table highlights the contrast between the broad disclosure of Graves and the subject matter presently recited by independent claims 1, 29, and 31-33.

Claim Feature	Claims 1, 29, 31-33: Instant Application	Graves
chopped glass fiber average diameter	$11 \pm 1.5 \mu\text{m}$	3-30 μm
fine staple fiber average diameter	$< 5.5 \mu\text{m}$	2-6 μm
proportion of fine staple fibers	1-30%	0-100%

Clearly, Graves does not expressly recite any of applicant's numerical ranges, as recited in independent claims 1, 29, and 31-33, but instead teaches ranges that are far broader with respect to each of these indicia. Neither the $11 \pm 1.5 \mu\text{m}$ diameter nor the 1-30% range appears whatsoever in Graves; none of the Graves examples falls within either of these ranges. Neither does the Examiner provide any objective basis on which it could be concluded that species within the range delineated by Graves but outside the claimed ranges would inherently share the same properties. Whereas applicant's mat must contain a blend of fibers of different average diameters, the Graves mat can contain exclusively fibers of one of the types, or any intermediate blend in any proportion. Applicant respectfully notes that the six species provided by Graves in his Table 1 (col. 17) accord with his express preference for a preponderance of small diameter fibers. Specifically, the examples employ a wool fiber to glass fiber ratio of 90/10 or 80/20, said preponderant amounts of wool fiber (80-90%) being far larger than the minor 1-30 percent delineated by claims 1 and 29-33.

The Examiner has further cited Gill et al., which is directed to a fibrous mat facer said to exhibit improved strikethrough resistance. The mat is said to be especially suited as a carrier, substrate, or facer for various curable materials that are placed on one surface of the mat while in a liquid state. Gill et al. further discloses a laminate comprising the foregoing mat and a vinyl plastisol coating or a coating of a foam insulation material such as polyurethane or polyisocyanurate foam.

Applicant respectfully traverses the Examiner's contention that the combination of Lehnert, Graves, and Gill discloses or suggests the subject matter of applicant's claims, as well as the propriety of combining the references in the manner proposed.

Gill et al. addresses the problem of strikethrough as a significant difficulty in the production of laminate materials. See, e.g., col. 1, lines 27-30. Gill et al. requires the presence of two types of glass fibers, viz. base fibers having a diameter between 8 and 25 microns and microfibers having a mean diameter in the neighborhood of one micron. Col. 3, lines 7-12 and 27-30. It is said that the selection of diameter of the base fibers is determined by process restraints, which limit the lower diameter, and the hand or feel of the mat, which restricts the upper limit. Col. 3, lines 14-19 and 21-26. Applicant respectfully submits that for a skilled artisan, such teaching would lead to selection of the smallest possible fiber. Specifically, applicant maintains that the skilled person would interpret the Gill teaching as suggesting the smallest possible diameter. By way of contrast, applicant's glass mat employs fibers having a narrow range of $11 \pm 1.5 \mu\text{m}$, a size range larger than the minimum of $8 \mu\text{m}$ provided by Gill. There is no disclosure or suggestion that would disclose or suggest, or controvert, applicant's surprising and unexpected finding that mat having such a size of base fibers, larger than the minimum of Gill et al.'s base fibers, can nonetheless be used to produce gypsum board having a smooth surface, that can directly accept paint in an aesthetically pleasing manner. See, e.g., the specification at page 4, lines 10-13; page 9, lines 7-14; and Example 6 (page 19, line 19, through page 20, line 7), and §§18-22 of the Declaration Under 37 CFR 1.132

§§18-22 of the Declaration Under 37 CFR 1.132 of Alan M. Jaffee submitted December 26, 2006.

Furthermore, the fibrous mat provided by Gill et al. is used for an entirely different purpose than applicant's mat. In particular, the Gill mat is said to be especially useful when forming composite materials employing a curable thermoset, such as a foamable material such as a polyurethane or polyisocyanurate rigid foam board, or as a carrier web in the vinyl flooring industry. In both instances, the mat is said to be "resistant remarkably" to strikethrough. The Gill et al. disclosure is conspicuously devoid of any reference to gypsum or other cementitious construction board. On the other hand, the Examiner has grounded the motivation to combine the Lehnert, Graves, and Gill references in a desire to produce a gypsum board with porous fibrous facers. The Examiner has pointed to Graves' citation of Gill as motivating the combination. However, at best, this citation might lead a skilled person to combine Graves and Gill, to produce mat suitable for flooring material, as disclosed by Graves at col. 11, lines 24-25. Graves only regards the low-permeability Gill mat as being more porous than previous mats for flooring. Nothing in Graves suggests that the Gill teaching be applied to mats for gypsum board, wherein the permeability requirement is much higher. And nothing in Graves suggests the Examiner's bootstrap, piecemeal argument that Gill furts be combined with Graves, and the combination then combined with Lehnert. Applicant respectfully submits that the need for relatively high permeability would lead a skilled artisan away from combining Gill, which does not teach a gypsum or like construction board, and also teaches avoidance of strikethrough, an

board, and also teaches avoidance of strikethrough, an objective diametrically opposed to the level porosity needed for gypsum board fabrication. It is thus maintained that the Examiner's motivation, in express contradiction to the teaching of Gill, is plainly a hindsight reconstruction based on applicant's own disclosure as a template.

In particular, applicant points to the express teaching of low air permeability of the Gill mat as leading the skilled artisan away from the combination proposed, particularly with respect to preferred claims 32 and 34, which recite a Frazier air permeability of at least about 250 cubic feet per minute. Nothing in Gill relates to board materials in which water vapor is extracted during board curing, since the material to be faced with the Gill mats is not an aqueous slurry, but rather a curable polymer such as foamable material such as a polyurethane or polyisocyanurate rigid foam. The Gill mat is further differentiated, since it is said to inhibit strikethrough, whereas embodiments of the Lehnert gypsum material require at least some amount of strikethrough to achieve the preferred structure delineated by Lehnert, e.g. at col. 5, lines 24-27. In context, these factors would provide a skilled artisan no basis even to try the Gill mat. Rather, the artisan would instead eschew the Gill mat for making gypsum board, based on Gill's teaching pertaining to inhibited strikethrough. Were the Gill teaching to be modified to provide a mat having applicant's increased permeability, it would be highly likely not to attain the objective of inhibiting strikethrough. Such a result is submitted to preclude the reconstruction proposed by the Examiner, in view of *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). See also *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*

Sulzer Morat GmbH ["A prior art reference may be considered to teach away when 'a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.'" 139 F.3d 877, 45 USPQ2d 1977, 1984 (Fed. Cir. 1998), quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).] and *McGinley v. Franklin Sports, Inc.* ["We have noted elsewhere, as a 'useful general rule,' that references that teach away cannot serve to create a prima facie case of obviousness." 262 F.3d 1339, 1354, 60 U.S.P.Q.2d 1001 (Fed. Cir. 2001) (citing *In re Gurley, supra*)].

Applicant further submits that the data provided both by the instant specification and the Declaration of Jaffee submitted on December 26, 2006, establish that the gypsum board of claims 1 and 29; the fibrous mat of claims 31-32; and the hydraulic set board of claim 33 all exhibit a level of smoothness that is surprising and unexpected, predicated their patentability. The Examiner has countered that applicant has not recited a gypsum board having a smoother surface. While applicant agrees that the foregoing claims do not expressly recite smoothness, it is submitted that the Examiner's conclusion that the argument is not commensurate with the scope of the claims is logically ill-founded. Applicant knows of no legal or logical reason why a functional property (e.g. smoothness or paintability) attained by constructing a gypsum board with a particular glass fiber facer must be expressly included in the claim to predicate its patentability. Rather, applicant's data demonstrate that mat made in accordance with the

in accordance with the express requirements delineated by the claim in fact results in the smoothness and paintability described in the specification. Applicant further maintains these properties represent a difference in kind, not merely a difference in degree, since there is no suggestion or disclosure in the prior art that would lead a skilled person to believe a glass fiber faced gypsum board could even be constructed. As a result, the attainment is no mere optimization, because nothing in the prior art would even motivate the skilled person to attempt to attain such properties. *See In re Waymouth*, [holding that “appellants’ claimed ratio was [not] the result of obvious experimentation, since, in our judgment, any such experimentation would not have come from *within the teachings of the art*.”] 499 F.2d 1273, 182 USPQ 290, 292-93 (C.C.P.A. 1974, emphasis in the original), citing *In re Fay*, 52 CCPA 1483, 347 F.2d 597, 146 USPQ 47 (1965).

For at least these reasons, it is submitted that the combination of Lehnert, Graves, and Gill does not disclose or suggest a gypsum or other hydraulic set board having the outstanding combination of structural and functional properties afforded by the gypsum board recited by present claims 1-3, 5, 7, 9, 11-23, and 25-29, the facer of claims 31-32, and the hydraulic set board of claim 33.

Accordingly, reconsideration of the rejection of claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-33 under 35 USC 103(a) as being unpatentable over the combination of Lehnert, Graves, and Gill is respectfully requested.

Claims 18-23 were rejected under 35 USC 103(a) as being unpatentable over Lehnert in view of Graves and Gill and further in view of US Patent 6,723,670 to Kajander et al., which is directed to a foam coated nonwoven fibrous mat said to have properties rendering it particularly suited for a facer on gypsum wallboard.

Applicant respectfully submits that this rejection is untenable on both procedural and substantive grounds.

In particular, applicant maintains that under the provisions of 35 USC 103(c), the '670 Kajander et al. reference is unavailable as prior art against the instant application under 35 USC 102(e), 102(f), or 102(g). Applicant's Amendment under 37 CFR 1.116 dated July 1, 2005 included an averment that, at the time of the invention of the subject matter delineated by the present claims, each of the present application and U. S. Patent 6,723,670 was owned by Johns Manville International Inc. or was subject to an obligation of assignment to Johns Manville International Inc. The present application was filed on June 27, 2003, and has been assigned to Johns Manville International Inc. Recordation of the assignment on November 5, 2003 is memorialized at Reel 014676, Frame 0541. U.S. Patent 6,723,670 is assigned on its face to Johns Manville International Inc. Recordation of the assignment of U.S. Patent 6,723,670 to Johns Manville International Inc. on August 7, 2001 is memorialized at Reel 012067, Frame 0435.

Applicant submits that the foregoing showing is sufficient under the conditions set forth in MPEP 706.02(I)(2)II to establish common ownership of the present subject matter and that of the Kajander '670 patent. Accordingly, under the provisions of 35 U.S.C. 103(c), U.S. Patent 6,723,670 is not applicable as prior art under 35 U.S.C. 102(e), 102(f), or 102(g) against the instant application. Attention is further drawn to the Examiner's acknowledgment of the unavailability of the Kajander '670 patent in the Non-Final Rejection dated July 20, 2005, in which previous obviousness rejections over the Kajander '670 patent were withdrawn pursuant to 35 USC 103(c).

The Kajander '670 patent issued from US Patent Application Serial No. 09/923,932, filed August 7, 2001. The application first published as US Patent Publication 2003/0032350 on February 13, 2003 and issued as the '670 patent on April 20, 2004. Thus, neither the Kajander publication nor the issued Kajander patent qualify as prior art under 35 USC 102(b) against the present application, which was filed June 27, 2003.

In light of the unavailability of U.S. Patent 6,723,670 as a prior art reference, applicant respectfully requests that the rejection of claims 18-23 under 35 USC 103(a) as being unpatentable over Lehnert, Graves, Gill, and Kajander et al. be withdrawn.

Even if Kajander were available, it is submitted that the Examiner has not established that combination of Lehnert, Graves, Gill, and Kajander et al. discloses or suggests the subject matter of claims 18-23.

Applicant respectfully submits that the subject matter of claim 1 is not disclosed by Lehnert, Graves, and Gill for at least the reasons set forth above. Kajander et al., even in any combination of these references, does not cure this deficiency. Accordingly, claims 18-23, which depend from claim 1, are patentable for at least the same reasons as claim 1.

Furthermore, the gypsum wallboard of Kajander et al. is distinguished from conventional wallboard by the incorporation of the foamed facer. In particular, the formation of the Kajander mat includes, as an integral part of its production, the deposition of a foam layer on top of the wet non-woven fibrous bindered web layer. The foam and the fibrous layer then are jointly cured. During subsequent gypsum board production, an unbound surface of the mat is applied to the board core. See col. 6, lines 44-55. Significantly, it is said that glass fibers of any diameter can be used, with 13 and 16 μm diameter fibers being preferred. Col. 7, lines 19-23. It is further stated that a substantial advantage of the Kajander et al. invention is that it enables use of larger, less expensive fibers, which are expressly distinguished from 9 and 10 μm diameter fibers. Col. 7, lines 25-27 and 30-32. It is thus submitted that the skilled person would be led away from the selection of a mixture of 11 ± 1.5 μm base fibers and smaller microfibers delineated by applicant's claim 1, from which claims 18-23 depend.

Accordingly, reconsideration of the rejection of claims 18-22 under 35 USC 103(a) as being obvious over the combination of Lehnert, Graves, Gill, and Kajander et al. is respectfully requested.

Claims 16 and 25-28 were rejected under 35 USC 103(a) as being unpatentable over Lehnert in view of Graves and Gill in further view of US Patent Publication US 2004/0209071 to Carbo et al., which discloses acoustical tiles, also known as acoustical panels, ceiling tiles, or ceiling panels, that are said to inhibit the growth of fungus, bacterial and other micro-organism.

The Examiner has asserted that Lehnert teaches a fibrous mat-faced gypsum board comprised of a gypsum core that is sandwiched between two sheets of glass mat. However, claims 16 and 25-28 all depend from claim 1 and inherit its limitations. As set forth hereinabove in connection with the rejection of claim 1 over Lehnert, Graves, and Gill, applicant maintains that Lehnert, even if it were to be combined with Graves and Gill, fails to disclose or suggest the particular composition and glass fiber characteristics delineated by claim 1.

Applicant thus respectfully disagrees that Lehnert teaches the claimed invention except for, a biocide contained in the core, for at least the reasons set forth hereinabove in connection with the obviousness rejection of claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-33 over Lehnert, Graves, and Gill. Recognizing the failure of Lehnert to disclose or suggest any biocide, the Examiner has further cited Carbo et al. However, applicant maintains that Carbo et al. fails to cure the lack of disclosure or suggestion of a gypsum board employing the nonwoven mat facers delineated by claim 1, from which claims 16 and 25-28 depend.

Furthermore, applicant submits that any disclosure of Carbo et al. relating to biocides is at best pertinent to claim 26, but not to claims 16, 25, and 27-28, which do not recite a biocide of any form, nor do they depend from claim 26. The Examiner has not provided any separate comments that establish the specific pertinence of any of the references applied to claims 16, 25, and 27-28 and fulfill the requirements of MPEP 706.02(j) concerning the rejection of claims. ["The examiner should set forth in the Office Action: (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate, *In re Hoch*, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n. 3 (CCPA 1970)."] and 37 CFR 1.104(c)(2) ["When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified."]. In the present instance, it is submitted that all the applied references are complex, in the sense of that term as used in 37 CFR 1.104, and that each of the references describes inventions other than that claimed by the applicants. Specificity of the rejection is further required under *In re Lee*, 277 F.3d 1338, 1344-45, 61 U.S.P.Q.2d 1430, 1435 (Fed. Cir. 2002) (finding that PTO must document its reasonings on the record to allow accountability and effective appellate review).

As a result, it is submitted that the Examiner has not established the *prima facie* obviousness of claims 16 and 25-28 over Lehnert, Graves, Gill, and Carbo et al., even in combination. Applicant maintains that these references do not disclose or suggest a gypsum

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board having the outstanding combination of properties afforded by the board recited by present claims 16 and 25-28.

Accordingly, reconsideration of the rejection of claims 16 and 25-28 under 35 USC 103(a) as being obvious over the combination of Lehnert, Graves, Gill, and Carbo et al. is respectfully requested.

In view of the foregoing remarks, and the Rule 132 Declaration by Alan M. Jaffee submitted on December 26, 2006, it is respectfully submitted that the present application has been placed in allowable condition. Reconsideration of the rejection of this application and allowance of claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-33, as amended, together with new claim 34, are earnestly solicited.

Respectfully submitted,

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